

REMARKS

Reconsideration and allowance in view of the foregoing amendment and the following remarks are respectfully requested.

Claims 1-10 are now pending.

A certified copy of the priority document was filed with this application on October 24, 2000. It is noted that no acknowledgement of the priority claim or receipt of the certified copy was provided on the PTO-326 that accompanied the first Official Action. However, the first paragraph of the Examiner's Action acknowledges receipt of "papers submitted" under 35 USC 119. It is therefore understood that the certified copy of the priority document has been received.

Claims 4 was objected to because of a noted informality. Claim 4 has been amended above to correct the informality noted by the Examiner.

Original claims 1, 3 and 4 were rejected under 35 USC 102(b) as anticipated by Abe et al, U.S. Patent No. 5,811,915. Applicant respectfully traverses this rejection.

As discussed in the background of the invention section of this application, conventionally, when a noble metal chip is provisionally fixed to the respective center or ground electrode by conventional resistance welding and then finally bonded by conventional laser welding method, the bonding strength of the noble metal chip to the respective center or ground electrode is likely to fluctuate. Research and experimental testing has revealed that this bonding strength fluctuation is caused by an unevenness of the molten portions formed by laser welding. The molten portion structure is affected by fluctuations in embedding length of the noble metal chip(s) to the center or ground electrode(s) during the provisional resistance welding. Conventionally, resistance welding of the noble metal chips is implemented under conditions such that the amount of current supplied and the time period for current supply are set and constant. However, research and experimental testing has shown that the embedding length of the noble metal chip will fluctuate even if the current amount and time period are the

same, due to varying conditions such as an uneven surface roughness of the cut surface of the noble metal chip or uneven surface roughness of the surface of the center or ground electrode. The invention solves the problem of uneven embedding by feedback controlling current supply amount and/or current supply time based on the transit embedding length and/or transit embedding speed of the noble metal chip. Thus, the current supply amount and/or current supply time can be controlled to achieve a consistent, predetermined embedding depth that yields a consistent bonding strength.

Anticipation under Section 102 of the Patent Act requires that a prior art reference disclose every claim element of the claimed invention. See, e.g., Orthokinetics, Inc. v. Safety Travel Chairs, Inc., 806 F.2d 1565, 1574 (Fed. Cir. 1986). While other references may be used to interpret an allegedly anticipating reference, anticipation must be found in a single reference. See, e.g., Studiengesellschaft Kohle, G.m.b.H. v. Dart Indus., Inc., 726 F.2d 724, 726-27 (Fed. Cir. 1984). The absence of any element of the claim from the cited reference negates anticipation. See, e.g., Structural Rubber Prods. Co. v. Park Rubber Co., 749 F.2d 707, 715 (Fed. Cir. 1984). Anticipation is not shown even if the differences between the claims and the prior art reference are insubstantial and the missing elements could be supplied by the knowledge of one skilled in the art. See, e.g., Structural Rubber Prods., 749 F.2d at 716-17.

Abe et al does not show or suggest controlling at least one of current supply amount and current supply time period in a provisional resistance welding operation to change according to at least one of transit embedding length and transit embedding speed of the noble metal chip to establish a predetermined final embedding amount as recited in applicant's claim 1. In Abe et al, the current supply amount is constant without regard to the transit embedding length or transit embedding speed of the noble metal chip. In this regard, the Examiner has acknowledged, in the paragraph bridging pages 3 and 4 of the Official Action, that Abe teaches a constant current and a constant pressure (which the Examiner equates to embedding speed). Note in this regard, Abe column 5, lines 37-67 and column 6, lines 1-5. There is no discussion or suggestion

whatsoever of feedback controlling according to transit embedding length or transit embedding speed. Further, there is no mention or suggestion of establishing a predetermined final embedding amount. The Examiner's reference to an embedding depth of .3mm or less and an exposed height of .1 mm or greater is contrary to the passage referenced by the Examiner. Column 7, line 44 of Abe refers to the height of protruding portion 3C as being 0.1 mm or greater. Such a limitation does not teach or suggest feedback controlling current supply amount and/or current supply time to establish a predetermined final embedding amount. Clearly, according to Abe's own disclosure, the final embedding amount varies.

It is further respectfully submitted that the passage at column 7, line 44 does not support the Examiner's conclusion that Abe meets the limitations of applicant's claim 3. In this regard it is respectfully noted that claim 3 specifies a final embedding amount of the noble metal chip to the centering ground electrodes as not being larger than .1 mm. Note in this regard Figure 3B of Abe which depicts the height and width discussed in column 7, line 44. These dimensions refer only to the protruding portion 3C and there is no description whatsoever of the claimed limitation on the embedding of chip 5 into the electrode. Moreover, from the illustration of Figure 3B the embedding of Abe appears to be greater than height H and thus would be greater than .1 mm. Such a teaching is clearly contrary to and does not anticipate claim 3.

For all the reasons advanced above reconsideration and withdrawal of the rejection based on Abe is respectfully requested.

Claim 2 was rejected under 35 USC 103(a) as unpatentable over Abe in view of Toya. Applicant respectfully traverses this rejection.

In order to prove obviousness, a challenger must present prior art references which disclose the claimed subject matter of the patent/application in question. If separate prior art references each disclose separate elements of a claim, the challenger must also show some teaching, suggestion, or incentive in the prior art that would have led one of ordinary skill in the art to make the claimed combination. See, e.g., Ashland

Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 297 n.24, 304-05 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986). In determining obviousness, there must be some reason other than hindsight for selectively combining the prior art references to render the claimed invention obvious. See, e.g., Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1143 (Fed. Cir. 1985).

Claim 2 is submitted to be patentable over Abe for the reasons advanced above with respect to claim 1. The Examiner's reliance on Toya does not overcome the deficiencies of the Abe reference noted above. It is therefore respectfully submitted that claim 2 is also patentable over the prior art.

It is further respectfully submitted that the skilled artisan would not modify Abe in view of Toya. In this regard, it is respectfully noted that the welding process illustrated in Figure 17 of Toya includes the formation of a hole with a drill 35 followed by filling the hole with a metal powder which is then pressed and compacted, after which the tip is fused by the powder layer to the stock 7 using resistance welding. Thus, the molten bond in Toya is formed below the metal tip, where the metal powder has been placed. The background of the invention of Abe refers to a conventional technique wherein a bore is formed in the top of the (center) electrode. The background of Abe describes that it is disadvantageous to form a bore and teaches his method as being an improvement over such a bore drilling method. The skilled artisan without the benefit of applicant's disclosure, in considering the background provided by Abe, would not find it obvious nor advantageous to employ the technique taught by Toya including the formation of a bore for receiving the noble metal tip. Toya does not teach or suggest how his technique might otherwise be incorporated in the Abe assembly.

Section 103 does not allow the Examiner to engage in picking and choosing from the prior art only to the extent that it will support a holding of obviousness, while excluding parts of the prior art essential to the full appreciation of what the prior art suggests to one of ordinary skill in the art. In re Wesslau, 147 USPQ 391 (CCPA 1975).

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Appl. No. 09/694,345
September 3, 2003

As the CAFC has said, obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. ACS Hospital Systems v Montefiore Hospital, 221 USPQ 929, 933 (Fed. Cir. 1984). There must be a suggestion in the art relied upon to use what one reference discloses in or in combination with the disclosure of the other reference or references relied upon by the Examiner. In re Grabiak, 226 USPQ 870, 872 (Fed. Cir. 1986).

In view of the foregoing, reconsideration and withdrawal of this rejection are requested.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in condition for allowance and an early Notice to that effect is earnestly solicited.

Respectfully submitted,

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